REMARKS

The present application was filed on September 17, 1999 with claims 1 through 22. Claims 1 through 22 are presently pending in the above-identified patent application.

In the Office Action, the Examiner rejected claims 1-4, 6-10, 12-15, 17-20, and 22 under 35 U.S.C. § 102(b) as being anticipated by Beale et al. (United States Patent No. 5,825,241). The Examiner also rejected Claims 5, 11, 16, and 21 under 35 U.S.C. § 103(a) as being unpatentable over Beale et al. in view of Sonnenschein et al. (United States Patent No. 6,130,859).

The present invention is directed to a terrestrial repeater for use in a satellite transmission system that may also include a plurality of satellites. The OFDM terrestrial repeaters differentially encode the transmitted signal over frequency, as opposed to time, in order to avoid channel phase distortion.

Independent Claims 1, 7, 13, and 18

The Examiner rejected independent Claims 1, 7, 13, and 18 under 35 U.S.C. § 102(b) as being anticipated by Beale et al.

Regarding claims 1 and 7, the Examiner asserts that Beale discloses an "orthogonal frequency division multiplexing OFDM transmitter 12 (FIG. 1) for transmitting an OFDM signal comprising a differential encoder for modulating said OFDM signal in the frequency domain using adjacent sub-carriers (col.5, lines 51-62)."

Regarding claims 13 and 18, the Examiner asserts that Beale discloses an "a differential decoder 32 for demodulating said OFDM signal in the frequency domain."

Contrary to the Examiner's assertion, Beale does not teach differential encoding/decoding in the frequency domain; Beale teaches differential encoding/decoding in the *time domain*. In the text cited by the Examiner, Beale teaches that "each of the individual carriers within a sub-channel is differentially encoded, or phase modulated, *over time*." Col. 5, lines 61-62. Independent claims 1, 7, 13, and 18 require differential encoding (or decoding) a signal in the *frequency domain* using adjacent sub-carriers of an OFDM system.

Thus, Beale does not disclose or suggest differential encoding (or decoding) a signal in the frequency domain using adjacent sub-carriers of an OFDM system, as required by each of independent claims 1, 7, 13, and 18.

Additional Cited References

Sonnenschein was also cited by the Examiner in rejecting claims 5, 11, 16, and 21 for its disclosure that Sonnenschein discloses "an OFDM transmitter and receiver for transmitting and recovering at least one unmodulated carrier (col. 4, lines 44-55)." Applicants note that Sonnenschein is directed to "an underwater apparatus for transmitting and receiving high rate data and voice communication including a transmitter, a receiver, and a Doppler frequency shift compensator." See, Abstract. Soonenschein teaches utilizing differential encoding in the time domain, as illustrated in Fig. 2. Sonnenchein teaches "a serial (original) data is inputted into the FEC encoder 5, which combines with it additional bits for enabling error correction at the receiving modem. From the FEC encoder 5, the data in serial form is conveyed to a serial to parallel device 12, essentially a shift register, which divides each section of 62 bits of serial data...into 31 two-bit symbols of data to be processed in parallel." Col. 7, lines 52-59. All of the 31 two-bit symbols created by the FEC encoder 5 "are conveyed to 31 differential encoders." Col. 8, lines 17-18.

Thus, Sonnenschein does not disclose or suggest differential encoding (or decoding) a signal in the frequency domain using adjacent sub-carriers of an OFDM system, as required by independent claims 1, 7, 13, and 18.

Dependent Claims 2-6, 8-12, 14-17 and 19-22

Dependent Claims 2-4, 6, 8-10, 12, 14-15, 17, 19-20, and 22 were rejected under 35 U.S.C. § 102(b) as being anticipated by Beale et al. and dependent claims 5, 11, 16, and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Beale et al. in view of Sonnenschein et al. Claims 2-6, 8-12, 14-17, and 19-22 are dependent on claims 1, 7, 13, and 18, respectively, and are therefore patentably distinguished over Beale et al. and Sonnenschein et al. (alone or in any combination) because of their dependency from independent claims 1, 7, 13, and 18 for the reasons set forth above, as well as other elements these claims add in combination to their base claim.

All of the pending claims, i.e., claims 1 through 22, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner's attention to this matter is appreciated.

Respectfully submitted,

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